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BUSH FRUITS

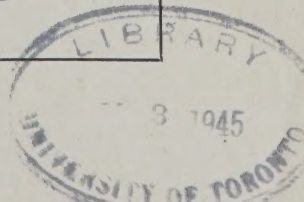
by

D. S. BLAIR
DIVISION OF HORTICULTURE
Experimental Farms Service

M. B. DAVIS
Dominion Horticulturist



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RASPBERRY CULTURE

The fact that the raspberry in its natural uncultivated forms is found growing wild over the entire breadth of Canada, and as far north as the Mackenzie River delta, indicates that the horticultural varieties may be cultivated with success in most parts of the Dominion. Actually it is grown successfully in every province.

Site and Soil.—Since the returns from a heavy yielding plantation are high, and the land is occupied continuously for from six to eight years, the best site on the property should be chosen for the plantation. Good drainage is absolutely essential, both at the soil surface and underneath, and, as the roots extend downward about three feet, the level of the water-table should not be nearer the surface than that distance. The best soil is a deep, rich, sandy loam, well supplied with humus, but both lighter and heavier soils are capable of producing profitable crops. Bearing in mind the long life of the plantation, thorough preparation of the soil before planting cannot be too strongly advocated. Of particular importance is the removal at this time of such weeds as are spread by means of running roots, couch grass and sow thistle, for example. If the soil is lacking in humus a green manure crop should be grown in advance of planting.

Certified Plants.—The chief means of avoiding raspberry diseases is by planting certified nursery stock or disease-free plants. A list of growers of certified raspberry stock by provinces may be obtained by writing to the Dominion Botanist, Department of Agriculture, Ottawa.

Planting.—Planting may be done in the very early spring or in the fall during the month of September or even as late as the middle of October. In central Canada fall planting is recommended.

Plants are set at about the same depth as or slightly deeper than they grew previously. The canes are cut back to a height of six inches before setting. The operation of setting is commonly done in one of two ways:—

1. The row is furrowed out with a plough, and the plants are placed against the side of the furrow; the roots partially covered by hand, then later completely covered with the plough. At the time of hand covering the roots, the soil should be firmly tramped about them.
2. Two men work together at planting; one opens the ground with a spade, the other places the plant in the hole, after which the spade is again inserted in the ground and the soil pressed against the roots.

Red raspberries are usually grown in the hedge-row system, the suckers being permitted to fill the row until a complete hedge-row of canes, one to two feet wide, is obtained. The plants are set out in rows seven or eight feet apart with two or three feet between the plants in the rows. As purple and black raspberries are non-suckering, they are usually grown in the hill system. The plants are set five or six feet apart each way.

Cultivation.—Cultivation in a raspberry patch should begin soon after planting and in an established plantation as soon as the land can be worked. It should at no time be deeper than four inches and just sufficient to keep the weeds under control. Sometimes it is necessary to clean out the weeds around the plants, and a fork is preferable to a hoe for this work. The plantation should be given a good clean-up with the spring-tooth cultivator and harrow when harevesting is over and a cover crop, such as fall rye, sown.

Fertilizer.—The wise use of fertilizer increases vigour and yield. Apply barnyard manure, 15-20 tons per acre, previous to setting out the plants. Annual applications should be made thereafter in late fall or early spring, the amount to apply being judged by the vigour and general health of the plantation. If barnyard manure is not available, green manure crops, known also as cover crops, should be sown between the rows annually after harvesting during the life of the plantation. Suitable cover crops are millet, buckwheat and fall rye. Fall rye should be drilled so that the plants will not become established between the canes during the following season. The cover crop is turned under when growth starts in the spring. These should be supplemented annually with a complete commercial fertilizer, 9-5-7 at the rate of 700 pounds to the acre, or a mixture of 400 pounds nitrate of soda, 180 pounds 20 per cent superphosphate, 100 pounds muriate or sulphate of potash, may be applied as an alternative to the same area.



Raspberry plantation, showing hedge-row system.

Pruning.—As soon as the crop is harvested it is advisable to remove all the fruiting canes and destroy them by burning. Pruning shears or a V-shaped brush hook are suitable for this work. After the third year, considerable thinning out is necessary in the red raspberry. With the hedge-row system each cane requires about forty square inches of space to develop properly, thus the canes should be thinned to six inches apart. With black and purple raspberries grown in the hill system, six or eight canes are left to each plant.

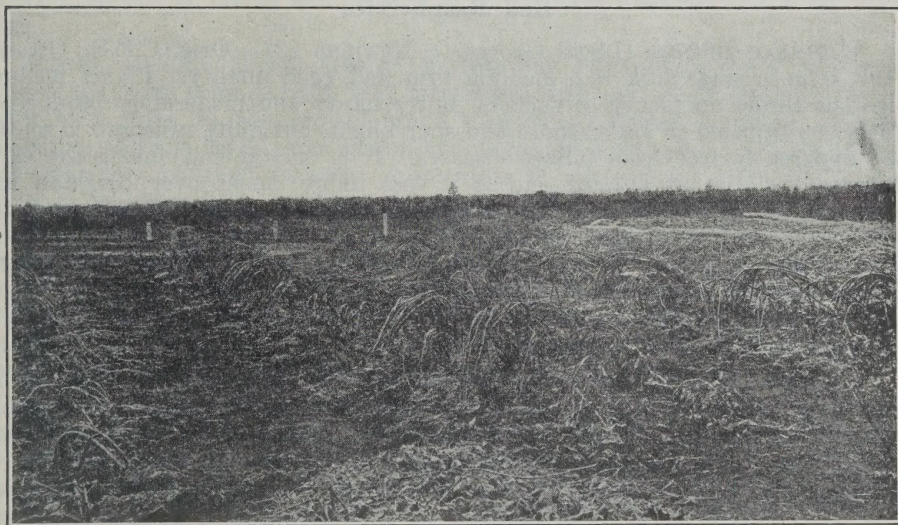
The value of cutting back red raspberry canes is debatable. In eastern Ontario and Quebec there is generally a little killing back of the tips which is equivalent to a spring pruning so that further cutting back is not necessary. Where the variety is especially tall, a topping given in late fall or spring may be desirable. It is always well to bear in mind that a severe heading back in red raspberries will reduce the crop very materially. Black and purple rasp-

berries should be pinched back in the summer; purples are generally pinched at about 24 to 30 inches and blacks at 18 to 24 inches. This pinching back causes the canes to produce laterals which in the spring should be shortened to eight or ten buds.

Where difficulty is found in keeping the berries off the ground the hedge-row should be trellised. This is best done by setting stout posts at 15 to 30 foot intervals in the centre of the row, to which cross arms about 18 inches long are attached at 24 to 30 inches above the ground, the height depending on the vigour of the variety. Wire is strung along the length of the row, attached to the ends of the cross arms.

Harvesting.—The fruit of the raspberry, particularly the red, ripens quickly, reaches its highest point of excellence quickly, and then deteriorates rapidly. Thus plans must be made well in advance to handle every detail of harvesting and marketing operations promptly and efficiently. Pint boxes are better than larger sizes for the red varieties, as less crushing of the berries takes place.

Winter Protection.—In some parts of Canada certain varieties of raspberries do not succeed very well unless the canes are protected in winter. This is readily done by bending down the canes just before winter sets in and holding them down by a little soil on the tips. To bend and cover them without breaking, a little soil is taken out on one side of the hill, the canes are then collected in a bunch, pressed down in the line of the row by means of a fork in the hands of one man while sufficient earth is applied by another man to hold them down. The cost of the labour involved in covering an acre is not very great. On the prairies best results are obtained when the canes are entirely covered with soil. Much of this covering can be done by horse labour, for which purpose the rows are placed at least eight feet apart.

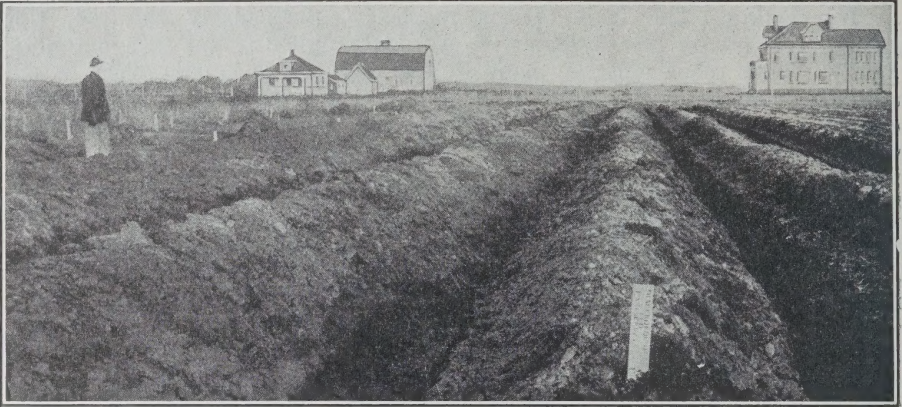


Two methods of preparing raspberry canes for winter. In the foreground the canes are bent over and held by clods of earth. In the background they are covered with straw for protection. Note poles used to hold straw in place.

Varieties.—The two outstanding red varieties are Viking and Latham. Of these, the former has fruit of superior excellence but lacks somewhat the hardiness of Latham, which, nevertheless, is a highly regarded fruit. Their

shipping qualities are about equal. Among the newer red introductions Gatineau, Madawaska, Trent, Newburgh, Marcy, Taylor, Ottawa and Rideau merit being widely tested.

Columbia is one of the best of the commercial purple sorts while Cumberland and Plum Farmer are the best blacks. There are several outstanding new black and purple varieties on the market which are superior to Columbia and Plum Farmer and should be planted in preference to the older varieties when plants are obtainable. Bristol, Dundas, and Naples are the best of the new blacks and Sodus and Marion the pick of the purples.



Raspberry canes completely covered with soil for winter protection

Red Raspberries

GATINEAU (0-276) (Lloyd George \times Newman 23).—Orig. C.E.F., Ottawa. Fruit large, round, dark red, medium firm and good quality. Plants medium vigorous throw up plenty of suckers, fairly hardy and moderately productive. Rather susceptible to anthracnose and spur blight, but quite resistant to mosaic and apparently free from foliage diseases. It is outstanding among the early ripening varieties at Ottawa and is a vast improvement over Brighton and Count in both berry size and appearance. Gatineau has been extensively tested and because of its earliness appears to offer good commercial possibilities in the Ottawa district and to a lesser degree in western Ontario. It comes in several days ahead of Viking and at least a week before Latham. However, where earliness is not of primary importance, its dark colour and the fact that it is not too firm have militated against it.

LATHAM (King \times Loudon).—Orig. Minn. Agr. Exp. Sta. St. Paul, Minn. Fruit large, round, bright red, attractive, medium firm but inclined to crumble, and medium quality. Plants vigorous, upright, sucker freely, hardy and very productive. Like Viking, it is widely grown in Canada. Its popularity is largely due to its productivity and because of its hardiness is particularly suited for culture in the colder regions.

MADAWASKA (0-272) (Lloyd George \times Newman 23).—Orig. C.E.F., Ottawa. Fruit large, deep red, medium firm, a bit crumbly if not picked carefully, good quality. Plants quite vigorous, many spines, send up plenty of suckers, hardy and productive. Susceptible to anthracnose and spur blight but quite resistant to mosaic and not affected by foliage diseases. About the same season as Trent and gives a good yield in the first week of the picking season. This variety is of real interest because of its extreme hardiness and because of its suitability

for canning and jam making. Extensive trials indicate that it is well adapted to most of the raspberry growing districts in Canada. Should be widely tested, especially in the colder regions.

MARCY (Newman No. 23 \times Lloyd George).—Orig. N.Y. State Agr. Exp. Sta., Geneva, N.Y. Fruit very large, largest red raspberry ever grown at Ottawa, conic, glossy dark red, large drupelets, apt to crumble if not picked carefully, medium firm and good quality. Plants quite vigorous, stout, form plenty of suckers, productive, moderately hardy, kills back some at Ottawa, appears reasonably free of mosaic. Because of its large size, good quality and freedom from disease, this variety is of particular value for the home garden.

NEWBURGH (Herbert \times Newman No. 23).—Orig. New York State Agr. Exp. Sta., Geneva, N.Y. Fruit very large, round, bright red with heavy white bloom which often gives it a dull appearance, firm and good quality. Plants medium height, branching, often need support, throw up numerous suckers, productive, and appear quite resistant to mosaic. The large size and firmness of the berries together with the productiveness of the canes make this variety worthy of trial. Like Viking it kills back considerably some winters.

OTTAWA (0-275) (Viking \times (Loganberry \times St. Regis)).—Orig. C.E.F., Ottawa. Fruit large, round, bright red, attractive, very compact, firm and good quality but somewhat hairy. Resembles Viking in appearance but stands up better in shipping. Plants vigorous, sturdy, few spines, resistant to anthracnose and spur blight but susceptible to powdery mildew and late yellow rust and may take mosaic. Favourable reports on this variety have been received from British Columbia, the Ottawa and Niagara districts, the Maritime Provinces and the northern United States. It appears to withstand dry conditions better than most varieties, probably because it sends up fewer suckers. Ripens about the same season as Viking and because of its shipping qualities should be given a trial.

RIDEAU (0-262) (Lloyd George \times Newman 23).—Orig. C.E.F., Ottawa. Fruit large, long conic, bright red, attractive, firm and good quality. Picks easily and drops to the ground when over-ripe. Plants vigorous, upright, productive and about the same season and degree of hardiness as Viking, killing back considerably some winters. Susceptible to anthracnose and spur blight, but quite resistant to mosaic and free from foliage diseases. Rideau appears to be a very heavy feeder and to do better on the lighter richer soils. In Ottawa and district it appears to be susceptible to manganese deficiency induced by the alkaline reaction of the soil. Where conditions are favourable on the prairies (where it is given winter protection), in Ontario, in the Maritime Provinces and in the northern United States, Rideau has been enthusiastically received as a berry for the fresh fruit trade.

TAYLOR (Newman No. 23 \times Lloyd George).—Orig. N.Y. State Agr. Exp. Sta., Geneva, N.Y. Fruit large, long conic, bright red, attractive, firm and good quality. Ripens with or later than Latham. Plants vigorous, upright, not so hardy as Latham at Ottawa and susceptible to mosaic. Taylor is worthy of trial because of its outstanding shipping qualities.

TRENT (0-264) (Newman 23 \times Lloyd George).—Orig. C.E.F., Ottawa. Fruit large, round, bright red, attractive, medium firm, good quality. Plants medium vigorous, produce many suckers, hardy and very productive. Rather susceptible to anthracnose and spur blight but apparently entirely resistant to mosaic and foliage diseases. Trent is two or three days later than Gatteau. It ripens with or a full picking ahead of Viking but yields much more than Viking during the first week of the season. Besides ripening early it is a

heavy yielder of bright, very attractive berries. The brightness and earliness of this berry are attracting a lot of attention in British Columbia, Ontario and the Maritime Provinces and the variety is worthy of extensive trial.

VIKING (Cuthbert \times Marlboro).—Orig. Horticultural Experiment Station, Vineland Station, Ontario. Fruit large, conic, bright lively red, attractive, medium firm, and very good quality. Plants vigorous, tall, stout, upright, produce plenty of suckers, almost free from spines and productive. It lacks somewhat the hardness of Latham and in certain winters the plants kill back considerably at Ottawa. Because of its quality and attractive berries, Viking is the most widely grown red raspberry in central Canada to-day.

Purple Raspberries

While the purple raspberries are not very popular for eating raw, they are excellent for canning or for mixing with the red to give more acidity.

COLUMBIA (A seedling of Cuthbert, probably pollenized by Gregg).—Orig. J. T. Thompson, Oneida, N.Y., 1888. Introduced about 1894. Fruit large, roundish conical, dark purplish-red, firm, moderately juicy, briskly sub-acid and of good flavour and quality. Season late. Plants vigorous, non-suckering, very productive, but none too hardy.

MARION (Bristol \times Geneva No. 2585 (red raspberry sdg.)).—Orig. N.Y. State Agr. Exp. Sta., Geneva, N.Y., and introduced in 1937. Fruit very large, purple, firm, quite juicy, tart and of good quality. Ripens about a week later than Sodus. Plants vigorous, non-suckering, productive. Like Sodus it kills back considerably some winters. It appears to be fairly free of mosaic, but at the Vineland Station goes down with Blue Stem. A large, late berry that follows Sodus and should be tested.

SODUS (Dundee \times Newburgh).—Orig. N.Y. State Agr. Exp. Sta., Geneva, N.Y. Fruit very large, medium purple, firm, sprightly flavour and good quality. Plants non-suckering, productive, stand up to mosaic much better than Columbia, very vigorous, but kill back badly some winters. At the Horticultural Experiment Station, Vineland Station, Ontario, it goes down badly with Blue Stem. Because of its productiveness, large fruit and apparent resistance to mosaic is worthy of trial.

Black Raspberries

CUMBERLAND (Thought to be a seedling of Gregg).—Orig. David Miller, Harrisburg, Pa., and introduced in 1896. Fruit large, black, firm, juicy, sweet flavour and good quality. Season medium early to late. Plants vigorous, fairly hardy, productive but susceptible to virus disease.

PLUM FARMER.—Orig. in Ohio and introduced by L. J. Farmer, Pulaski, N.Y., 1895. Fruit large, black but with a bloom and not glossy like some varieties, firm, juicy, sub-acid to mild, good quality. Season early to mid season. Plants vigorous, hardy and productive.

BRISTOL.—Orig. N.Y. State Agr. Exp. Sta. Fruit large, firm, attractive, glossy black, very good quality. Plants vigorous, very productive and quite hardy. Because of its earliness and high quality, this variety is worthy of extensive trial.

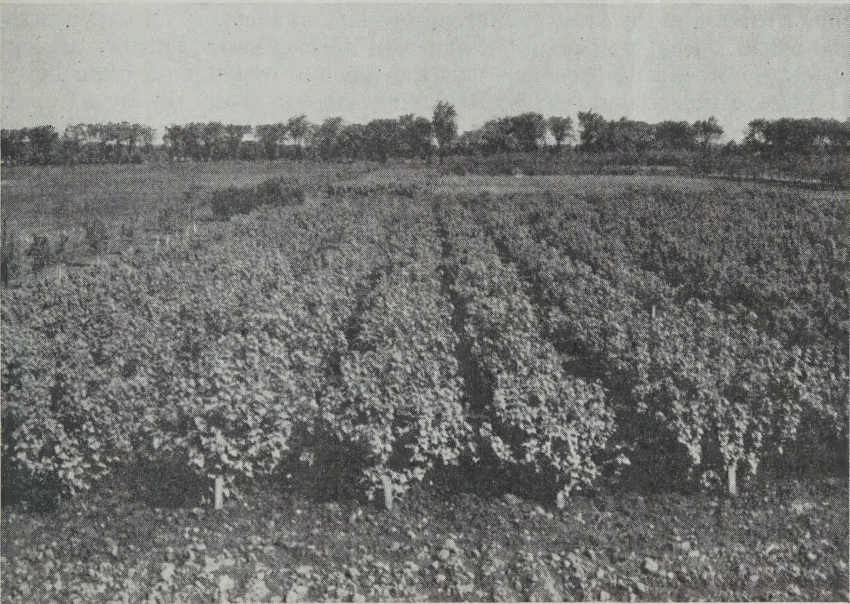
DUNDEE.—Orig. N.Y. State Agr. Exp. Sta. Fruit large, glossy black, attractive, moderately firm, mildly sub-acid and very good quality. Plants tall, vigorous, productive and moderately resistant to mosaic. Dundee has quality and should be widely tested.

NAPLES.—Orig. N.Y. State Agr. Exp. Sta. Fruit large, attractive glossy black, firm and good quality. Plants vigorous, productive, fairly hardy and appear resistant to anthracnose. Promising as a late variety.

CURRENT CULTURE

The high nutritive value of black currants, which are particularly rich in vitamin C, gives special importance to this bush fruit. Every effort should be made to increase acreage yields of existing plantations by improved cultural practices, and, where possible, to set out new plantings. Currants should not be planted in districts where the white pine is considered of commercial importance as they are host plants for the white pine blister rust, a very serious disease in sections where the five needled pine is grown extensively for timber. This bush fruit can, however, be grown successfully where white pines are of no economic importance, if timely and careful spraying is practised. Thanks to the persistent efforts of plant breeders, the long-dreamed-of black currants resistant to this disease may soon be a reality. The restrictions imposed on its cultivation in the interests of the timber-growing industry will then cease to exist, resulting in an economically important extension of territory in which its cultivation may be successfully undertaken.

Currants are natives of cool, moist, northern climates. They are very hardy, and will withstand extremely low temperatures if windbreaks are provided. Black currants thrive well under the climatic conditions that prevail in central Canada, particularly on the heavy, well drained soils, and yields up to 4 tons per acre may be obtained. Red and white currants yield even heavier crops than the blacks.



Currant varietal plantation, Ottawa.

Soil and Site.—Within any particular farm there exists a marked difference in the desirability of different fields for currant culture. Currants should be planted in rich soil in order to get the best results. The soil should also be

cool as the currant is a moisture-loving bush. The currant roots near the surface, hence, if the soil is hot and dry, the crop will suffer. The ideal soil for the cultivation of these bush fruits is a rich, deeply worked clay loam, well supplied with humus, cool, moist, and well drained. Light sandy soils and heavy soils that tend to bake are undesirable. An abundant and continuous supply of moisture being one of the principal requirements of these plants, it follows that an abundance of humus in the soil is all important.

They will not do well on sites where water stands for any length of time during any part of the year. When possible, select a site with a gradual slope to give good surface and air drainage. A northern exposure is to be preferred, as in such a situation the currants are not likely to suffer in a dry time.

Propagation.—Plants of the varieties desired usually can be obtained from reliable nursemens at a reasonable cost and this is a satisfactory way to obtain them for the home garden or for commercial planting. They may be propagated by the grower, however, by means of cuttings or layers.

Since currants root readily from cuttings, they are propagated almost entirely by this method. The best time to make the cuttings is in the autumn after the leaves have dropped, since currants begin to grow very early in the spring and once the buds have swollen they cannot be rooted successfully. The cuttings are made from vigorous shoots of the current season's growth. These are made by cutting the shoots into pieces eight to ten inches long. The base of the cutting should be made with a square cut below the bottom bud and there should be at least one-half an inch of wood left above the top bud. The best method is to plant the cuttings as soon as they are taken, but, if this cannot be done, they may be buried upside down in sand or stored until spring in a cellar cool enough to keep them dormant and moist enough to prevent drying but not so moist as to cause mould to develop on them. The cuttings should be planted in a rich, well prepared and well drained soil. Furrows are opened three feet apart and deep enough that the top bud or not more than two buds will be above the ground. The cuttings are placed about six inches apart on the smooth side of the furrows, then soil is thrown in and tramped well about them.

Planting.—Currants start growth very early in the spring and for this reason autumn planting is advisable. In order that the roots may become established in the soil before winter sets in, the plants should be set just as soon as it is possible to obtain them in a dormant state. If spring planting is unavoidable, the land should be ploughed and manured in the fall and made ready for early spring planting. Currants make strong growth, hence should be given plenty of space. The distance between rows depends mainly on the type of cultivator that will be used. A spacing of six feet is ample for a one-horse cultivator. Five feet between plants in the row is considered good spacing. Strong one-year-old plants are best for planting but two-year-old plants are better than poorly-rooted yearlings. It is better to err on the side of planting a little deeper than is necessary than to plant too shallow. A good rule to follow is to set the plants at least an inch deeper than they were in the nursery. The soil should be well tramped about the young plants as they are set out.

Cultivation.—Cultivation should be just sufficient to keep the weeds well in check. When the plants are young the cultivation should be fairly deep in the middle of the row as this tends to make the roots grow somewhat deeper than they otherwise would. However, as the roots begin to extend across the rows, cultivation should be quite shallow since many of the roots are quite near the surface.

Fertilizers.—Currants are heavy feeders and should be supplied with a large amount of plant food. There is little danger of giving them too much fertilizer. Too frequently, their nutritional requirements are not adequately supplied. Unlike many other fruits, they are not subject to winter injury if too rank growth is made and, moreover, they do not grow wood at the expense of fruit. It is, therefore, safe to apply liberal amounts of nitrogen, especially as the plantation gets older. Where it is possible to secure an adequate supply, barnyard and poultry manure may be used to good advantage at the rate of 15 to 20 tons per acre as an initial pre-planting application and annually thereafter during the life of the plantation in the autumn and winter or, if well rotted, in the early spring. If manure is unobtainable green manure crops should be grown in advance of planting and supplemented at time of planting and each year thereafter with a 9-5-7 complete fertilizer at the rate of 400 to 600 pounds per acre together with straw mulch as required to maintain humus.

Pruning.—Pruning should be done during the dormant season, either following the dropping of the leaves in the autumn or in the early spring before growth starts.

Black Currants

The black currant bears most of its fruit on wood of the previous season's growth, therefore the pruning is largely directed to leaving a plentiful supply of new wood. They differ in this respect from red and white currants which produce their fruit largely on spurs which develop from wood two or more years of age. Pruning the first season after planting should consist in shaping the bush. After the second year it is, in effect, a process of renewal.



Left—Black currant bush before pruning.

Right—Same bush after pruning. Most of the old wood, which is dark in colour, has been removed.

Red and White Currants

Red and white currant bushes, the second year after planting should have the weaker shoots removed leaving six to eight strong shoots according to the vigour of the bush. At the end of the third year four or five two-year-old shoots should be left and the fourth year after planting about three shoots each of three-year-old, two-year-old and one-year-old wood. Since red and white currants produce the bulk of their fruit on spurs on the two- and three-year-old

wood, pruning after the bushes are more than three years old consequently consists in removing all branches more than three years of age which have passed this heavy bearing period leaving just enough one-year-old shoots to take their places.

In pruning varieties of spreading growth, the outer and lower shoots generally should be removed. Varieties having an erect habit of growth should be trimmed by the removal of the central shoots.

Duration.—The life of a currant plantation is at least fifteen years if properly cared for. The number of years a plantation will continue in good bearing condition depends to some extent upon location and soil, but the most important factor is the care which it receives.

Varieties.—Over a period of some forty years, the Central Experimental Farm at Ottawa has tested practically every black currant variety under name, including the famous English varieties. In making varietal recommendations, however, sole reliance has not been placed on their performance at Ottawa, for most varieties have been under test on Dominion Experimental Stations from the Atlantic to the Pacific. The following varieties are considered to be the best for commercial planting in central Canada—Magnus, Saunders, Kerry and Climax. Boskoop Giant because of its large size and high quality is recommended for home use only. Magnus, Kerry and Climax are recommended by ten of the Dominion Experimental Stations for commercial planting in their immediate districts. Saunders is recommended by nine Stations. So it is evident that these varieties do well under a wide range of climatic conditions. At Ottawa in 1943 Saunders produced over four tons of black currants to the acre, Kerry about the same, Magnus three and three-quarter tons and Climax about four and one-half tons, thus all are heavy yielding varieties. Magnus is preferred because of its evenness of ripening, making it possible to harvest the entire crop at one picking and thus keeping picking costs down to the minimum. The cost of picking is probably the most expensive item in connection with currant cultivation. At present it costs about five cents a pound to harvest this fruit.

Fays Prolific, Cherry, Perfection are the red currant varieties commonly planted in the past. Two recent introductions Stephens No. 9 and Red Lake are so superior to the varieties commonly grown that it is recommended that all red currant plantings in the future should be of these varieties only. Cascade, another new red variety, also offers real promise.

There is no marked demand for white currants, but where a few bushes are wanted for home use White Dutch is preferred. White Grape is also a good variety.

Black Currants

BOSKOOP GIANT.—Outstanding because of its large size and high quality. Bushes are somewhat sprawling in habit, medium in vigour and low yielding. Berries are very large, uniform and excellent quality. Lacks productiveness for commercial use.

CLIMAX.—A vigorous, productive variety of good quality. Bushes are sturdy and erect. Berries are medium to large and uniform.

KERRY.—Fruit and plant characteristics very similar to Saunders. Bushes are upright, vigorous and productive. Berries are large and good quality but not so uniform in size as Magnus and Saunders.

MAGNUS.—Particularly noteworthy because its fruit ripens evenly, making it possible to clean up the bushes in one picking. Bushes are upright in habit, medium vigorous and productive. Berries are large, uniform and of good quality.



Upper—Red currant bush before pruning.

Lower—Same bush after pruning. Much of the old wood, which is dark in colour, remains.

SAUNDERS—A vigorous variety which thrives well under a wide range of soil and climatic conditions. Bushes are erect, vigorous and productive. Berries are large, uniform, quite good quality and ripen fairly evenly.

Red Currants

CASCADE (Minn No. 70)—An open pollinated seedling of Diploma. The bush is medium in vigour, medium erect and productive. The clusters are above medium in size, compact with medium long stems. The berries are very large, attractive, dark red, pleasant sub-acid flavour and very good quality. The fruit of Cascade ripens about a week earlier than Red Lake and the berries are larger but the clusters are not as long. Worthy of extended trial.

RED LAKE.—A Minnesota origination of unknown parentage and is the best red currant so far introduced from the United States. Its clusters are a little longer than Stephens; otherwise the two varieties are about on a par, both producing very large, glossy, light red berries of excellent quality that may be eaten out of hand. Bushes are vigorous and productive but somewhat sprawling.

STEPHENS No. 9.—Originated by C. L. Stephens, Orillia, Ont., and distributed by the Central Experimental Farm, Ottawa. Bushes are vigorous, somewhat spreading and productive. Clusters medium length, not as long as Red Lake, but are compact. Berries are very large, attractive bright red, sub-acid, and excellent quality and can be used for dessert purposes. On a par with Red Lake, both varieties being vastly superior to the varieties commonly in use.

White Currants

WHITE DUTCH.—Undoubtedly the best of the white fruited varieties, mainly because of its excellent quality. Bushes are quite vigorous, upright, and attain fair size. Berries are of medium size, yellowish-white, tender and translucent, borne in medium compact bunches. The flesh is tender, juicy, mildly sub-acid and very high quality.

WHITE GRAPE.—One of the best of the commonly grown white varieties. Bushes are of good vigour, upright and productive. Berries medium size, yellowish-white, translucent, tender, borne in medium, fairly compact clusters, quality good. Berries not so uniform and cluster not so compact as White Dutch, but is a heavy yielder of high quality fruit.

GOOSEBERRY CULTURE

The gooseberry, when compared with other cultivated fruits, is not so important in Canada as it is in northern Europe and especially in the British Isles where it has long been popular. The gooseberry is a native of Canada and is found growing wild almost to the Arctic Circle. It may be grown quite successfully in any province in the Dominion, but, like the currant, thrives best in those regions where the summer temperatures are relatively cool.

Site and Soil.—The gooseberry is a moisture-loving plant, hence a soil should be chosen where there can be a constant supply of water during the growing season. In dry soils, gooseberries suffer very much in time of drought, the foliage often falling prematurely and the fruit being scalded by the sun. The soil should be a cool one. Moist soils are usually cool but the surface of a sandy loam soil gets very hot in summer, hence it is not the best for this fruit. Well drained, heavy clay loams are the most suitable for gooseberries as these usually are cool and moist.

Propagation.—Gooseberries may be propagated either from cuttings or by layering. The average person will usually get the best results from layering, as cuttings are often unsatisfactory. To propagate by layering, the bushes should be pruned severely in the autumn or early in the spring for best results. This will induce a strong growth of young shoots the next season. When these have made most of their growth, which will be in July, the earth is heaped up around and through the bush until only the tips of the young shoots are left uncovered. The soil is packed down and then a covering of loose soil thrown on top to retain moisture better. Most of the American varieties will have rooted well by autumn, and the young plants may be detached and planted in nursery rows either the same fall or the following spring, to be grown there for one season. English varieties unusually take two years to root, and the soil must be left about the bushes for that time. Cuttings of American varieties will sometimes give fairly satisfactory results if made from well ripened wood and treated in the same manner as currant cuttings. The cuttings are made six to eight inches or less in length, and buried in the soil over winter. In spring they are set out in nursery rows, planting them deep enough so that only one or two buds are above the ground. Both American and English varieties may be propagated from greenwood cuttings in a greenhouse, or hotbed with bottom heat.

Planting.—As gooseberries start to grow early in the spring it is usually preferable to plant in the autumn, and since the leaves drop early, they may be planted in September and will be in good condition when winter sets in. Strong one-year-old plants are the best but if the one-year-olds are lacking in vigour then two-year-old plants should be used. The plants should be set in rows six feet apart and five feet apart in the rows. This gives ample room for cultivation. The plants are set somewhat deeper than they stood in the nursery. It is better to plant too deep than too shallow. If the plants are of a variety that does not branch naturally they should be set quite deep so that the lowest branch starts just below the surface of the soil. This develops a bush rather than a tree type of plant. All broken roots should be trimmed off before planting and the soil should be well tramped about the young plants as they are set out. The tops should be cut back quite hard at the time of planting, from six to twelve inches high depending upon the vigour of the plant.

Cultivation.—Prior to planting the soil should be well prepared and made mellow as for a crop of roots. After planting, the cultivation should be very thorough so as to keep the weeds well in check. As gooseberry roots grow near the surface, cultivation should be shallow. On soils that tend to be dry, mulching with straw to retain moisture is advisable.

Fertilizer.—Gooseberries are heavy feeders and should be supplied with a large amount of plant food. A good application (15 to 20 tons per acre) of well rotted manure, applied yearly in the late autumn or early spring and thoroughly worked into the soil, will do much to bring about these favourable conditions. If barnyard manure is not available an annual application of a 9-5-7 complete fertilizer should be made at the rate of 400 to 600 pounds per acre.

Pruning.—The best time to prune gooseberries is in the autumn or early winter. It may be carried out in the spring, but growth starts very early and it is often difficult to get the work done before the buds start to swell. As the gooseberry makes much more wood than it is desirable to leave, severe pruning is necessary. The usual custom in America is to grow the gooseberry in bush form. The bush should at first be brought into a good shape by leaving a few of the strongest shoots regularly distributed to make an open head. Five or six of these shoots are quite sufficient to leave at first. The pruning should be done

with a view to retaining only vigorous bearing wood. Therefore, as the bush gets older new shoots are allowed to grow to take the place of the older ones. Fruit is borne on year-old wood and from spurs on older wood. It is usually not desirable to have any wood more than three years old. The weakest young shoots should be cut off at the ground, also all the strong young shoots not required for fruiting or to take the place of older branches to be cut away. The side shoots from older branches should be headed back or cut out altogether so as to maintain a fairly open head, making it as easy as possible to pick the fruit and yet leaving sufficient wood to produce a good crop and to shade the fruit from the sun, since in a hot dry time gooseberries are liable to injury by sun scalding. It is advisable to cut out all branches which touch the ground as there will then be a better circulation of air, and the fruit will be kept off the ground.

Duration.—Gooseberries will often begin to bear the second year after planting, but there will not be a full crop until the fourth season. If the soil is kept in good condition by an annual application of well rotted barnyard manure in the autumn, harrowed in the following spring, and if the bushes are kept sprayed and well pruned, the plantation will not need to be renewed for many years.

Varieties.—Clark, Silvia and Poorman are considered to be the best varieties for commercial planting. Charles, Josselyn and Downing are still used for commercial planting and are reliable commercial varieties. Among the newer introductions Fredonia and Ross are outstanding and are worthy of extended trial.

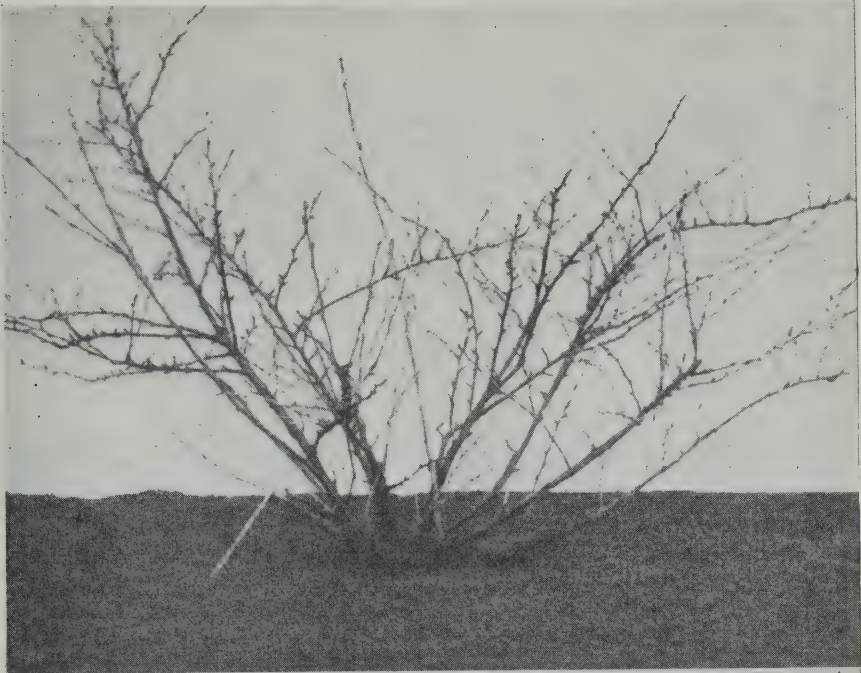
CLARK.—European type, thought to be a natural hybrid between native and European varieties. Fruit very large, elliptical, greenish-yellow with copper-red blush when fully ripe, good quality. Plants moderately vigorous, quite hardy, appear free of mildew and although none too productive at Ottawa, yield well at the Horticultural Experimental Station, Vineland Station, Ontario. Highly recommended because of the large size, high quality and freedom from disease.

FREDONIA.—A very promising gooseberry of the English type originated at the New York State Agricultural Experiment Station. The berries are large, deep red when ripe and of good quality. The bushes are vigorous and to date have shown no signs of winter killing. If the bushes prove hardy, Fredonia, because of its desirable fruit characteristics, should prove popular in Canada.

POORMAN (Houghton \times Downing).—A United States introduction originated by Wm. H. Craighead of Brigham City, Utah. It is especially noteworthy because of its vigour and productivity. The plants produce numerous new shoots and grow rather dense and spreading. The fruits are large, green at first and later changing to an attractive pinkish-red. The flesh is tender, juicy, quite sweet when ripe, and good quality.

ROSS.—Recently introduced by the Dominion Forest Nursery Station, Indian Head, Saskatchewan, produces berries almost as large as Clark. The bushes are very hardy, vigorous and productive. The fruits are very large and of a pale green colour. Because of its hardiness and berry size, it is worthy of extensive trial.

SILVIA (parentage unknown).—Orig. Wm. Saunders, London, Ont. Introduced by the Horticultural Division, Central Experimental Farm, Ottawa. The bushes are very hardy, strong, moderately upright in habit and productive. The berries are large, greenish, later becoming more or less covered with dull red, good flavour and high quality when ripe. Outstanding because of its hardiness, productivity and uniformity of fruits.



Upper—Gooseberry bush before pruning.

Lower—Same bush after pruning. Only vigorous bearing wood remains. Note heading back to maintain good shape.

The following thornless gooseberries, originated by the Division of Horticulture have been very impressive at Ottawa. The absence of thorns greatly facilitates picking.

0-271 (Spinefree \times Clark).—Berries about the same size as Poorman, round to pear-shaped, medium red when ripe, thick, tough skin and pleasant mild sub-acid flavour. The bushes are vigorous, hardy, upright in habit and the canes are almost thornless. This variety is fairly productive but not so heavy a yielder as 0-272.

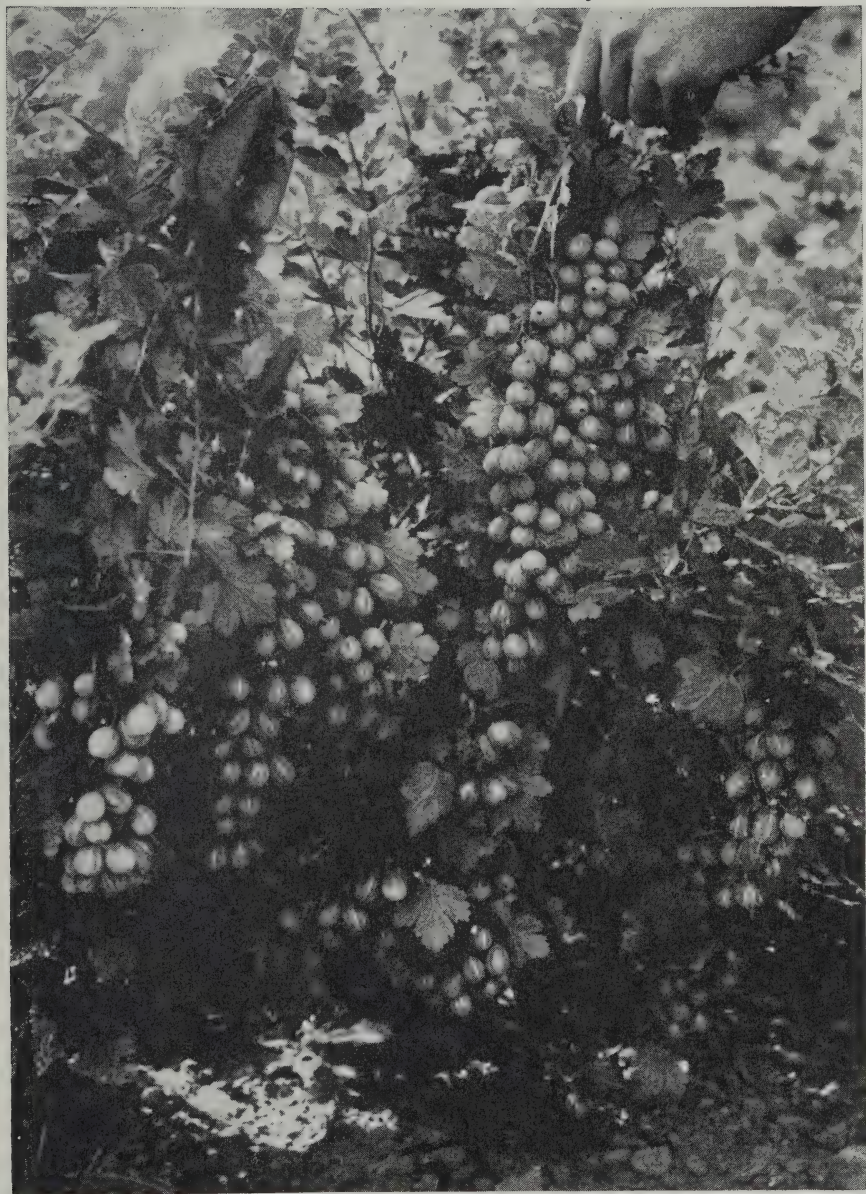
0-272 (Spinefree \times Clark).—This variety is probably the best of the thornless gooseberries. It is very productive, the berries about the same size as Poorman, turn red when ripe, are distinctly pear-shaped, have thick skins and are of good quality. The bush is vigorous, hardy, of upright habit and suckers freely. There are a few short thorns on some of the canes, but not enough to be troublesome.



A fruiting branch of one of the newer thornless varieties developed at Ottawa.

0-274 (Spinefree \times Clark).—Not quite so large fruit as 0-272 but very productive. The berries are oval in shape, turn red when ripe, have medium thick skins and are of good quality. The bushes are vigorous, hardy, sucker freely, have stout branches and are medium upright in habit. The canes have a few short spines, but not enough to be troublesome.

SPINEFREE ((*Ribes oxycanthoides* \times Victoria) \times Mabel).—This was the first commercial sized thornless gooseberry produced at Ottawa. It is a very vigorous grower and hardy, but frequently fails to set much fruit. However, it has done very well in Manitoba and for that reason and because of its freedom from thorns it should be given a trial where hardiness is a primary factor. The fruit is of commercial size, but not as large as the three seedlings listed above. The berries are round in shape, light red when fully ripe, thin-skinned and of good quality. The branches are entirely thornless.



With proper cultivation the gooseberry is a prolific yielder.

BLACKBERRY CULTURE

The blackberry is a native of the eastern States, and in Canada it is found wild from Nova Scotia westward and northward to near the Manitoba boundary. The commercial culture of blackberries in Ontario and Quebec is confined mainly to southwestern Ontario. In the Lake Huron district, where there is a heavy fall of snow, blackberries succeed very well, but when unprotected by this covering in winter they are not satisfactory. They are grown with varying degrees of success in other parts of these provinces, the amount of protection they get in winter usually governing the results obtained. At Ottawa there is rarely a good crop of blackberries, as there is not quite enough snow as a rule to protect them well, and the canes are injured. Blackberries do exceptionally well in British Columbia, and also succeed in parts of the Maritime Provinces.

Site and Soil.—The blackberry ripens its fruits at a trying time of the year, as in late July or August there is often hot, dry weather. If there is not a good supply of moisture in the soil the fruit will dry up and what has promised to be a big crop will result in only a few good berries. In selecting a soil, therefore, one should be chosen which will retain moisture well. As the blackberry is inclined to grow late in the fall, and on this account is more tender than the raspberry, soil should be chosen which, although rich in plant food, has not an excess of nitrogen, which would be likely to induce late growth. Hence bottom land should be avoided in most places as such is likely to be rich in nitrogen. One of the best soils for blackberries is a good upland clay loam. In such soil there is likely to be sufficient plant food without an excess of nitrogen, making conditions favourable for the development of the crop and ripening of the wood. The soil should be well prepared as for all other bush fruits.

Propagation.—The blackberry is one of the easiest fruits to propagate. The suckers, which are produced in great numbers, may be used, or, if one wishes to propagate a variety even more rapidly than by suckers, it may be increased from root cuttings. The roots are cut up into pieces two or three inches long. They may either be made in the fall or in the spring and then planted in nursery rows about three inches deep for one season. If the soil is well cultivated, good plants will be available at the end of the first season.

Planting.—Spring planting is usually preferable because if planted in the fall they should be set late. If planted early in the autumn the young plants are likely to start growth and the new shoots may be injured by the frost. Strong one-year-old suckers are the best to plant.

Blackberries require plenty of space to allow for proper development and to afford an opportunity for cultivating and picking. The rows should not be less than eight feet apart, with the plants about three feet apart in the rows. Where the blackberry grows very vigorously, four feet apart in the rows is not too much. The Evergreen variety is planted sixteen or more feet apart in the rows. The quickest way to plant is to open deep furrows eight feet apart which cross a light mark every three feet. At each intersection of the rows the plant is set a little deeper than it was before and the soil thrown against it and well pressed against the roots. Where the soil is well prepared, planting may be done very quickly by opening a hole with a spade when the soil is lightly marked both ways.

If especially fine fruit is desired a good method of planting is to set the plants about eight feet apart each way and keep them in hills. By this method cultivation may be maintained both ways, and the plants, having a better opportunity to develop, will bear finer fruit.

Cultivation.—Good cultivation should be given the first year to get the plants well established and to procure strong growth early in the season. The conservation of moisture is very important in growing blackberries and as the fruit does not ripen until late in the summer, cultivation will be later than for most fruits. It will usually be found best to continue cultivation until the berries are almost ready to pick.

Fertilizer.—The best practice to follow is to fit the land previous to setting out the plants with well rotted barnyard manure applied at the rate of 10 to 15 tons per acre. Annual applications should be made thereafter in the early spring or late fall. The amount to apply will depend on the vigour of the plants. If barnyard manure is not available then cover crops should be sown between the rows annually. These should be supplemented with a complete commercial fertilizer, 9-5-7, at the rate of 400 to 600 pounds per acre.

Pruning.—When the new plants are eighteen inches to two feet in height the tips should be pinched off to make the canes throw out side shoots and to prevent them from growing too tall. All except three or four of the strongest canes should be removed at the end of the growing season. In the second year the new shoots should be pinched back when they reach two feet. As they all will not reach the same height at the same time it is necessary to go over the plantation several times. All suckers should be destroyed. It is important to do this work at the proper time. If it is done too late the laterals will grow too late and be injured by winter. During the second season five or six of the strongest canes should be left and all the rest removed either during the summer or in the autumn.

This practice is then followed every year, the canes which have borne fruit being removed as soon after fruiting as it is convenient to do the work. Each spring the laterals should be headed back considerably, the length of lateral to be left depending on the variety since some kinds set fruit further out on laterals than others. Until the fruiting habit of the variety is known the laterals should not be headed back until the flower buds show. The length of lateral to leave after pruning will vary considerably, but there should not be more than two feet left. If it has not been possible to pinch back the new shoots in the summer, and no pinching is better than pinching too late, the bushes may be headed back to three or four feet in height in the spring, and the laterals headed in as already described.

The pinching back in summer tends to keep the bushes lower than they otherwise would be and they are thus less exposed in winter. They may be protected still more by bending them over and covering the tips with soil to hold them in place, although this is very unpleasant work, and it scarcely pays to do it if blackberries are grown for sale. More protection is given if the canes are covered with soil, straw or coarse manure. In parts of Canada where the winters are mild and low bushes are not necessary, a trellis is provided for supporting the canes. This makes the fruit easier to handle.

Harvesting.—A blackberry, when it is perfectly ripe, is one of the finest fruits, but if picked before it is ripe is quite unfit for use. Unfortunately some varieties become black before they are fully ripe and are picked too soon. Blackberries that are picked before they are well coloured, reach the market in an unripe condition, and it is not to be wondered at that those who try them in this condition do not wish to use blackberries again. It would be in the best interest of their business if fruit growers would pay more attention to this matter and only ship fruit which will be in good condition when it reaches the consumer.

Renewing Plantations.—A blackberry plantation is in full bearing the third season after planting and will continue profitable for a long time if well cared for, but it is usually best to renew the plantation every eight or ten years.

Varieties.—The parts of Canada in which blackberries succeed well are limited to those where the winters are only moderately cold or where the winters are cold but where there is abundance of snow for protection.

Medium Hardy—Lowden and Ora Neil.

Medium Tender—Agawam, Snyder, Eldorado in the order named.

Wachusett and Minnewaski have yielded best at the Dominion Experimental Station, Kentville, Nova Scotia.

Varieties for southern Ontario.—In addition to above, Kittatinny.

For coast climate of British Columbia—Snyder, Erie and Thornless.

BOYSENBERRY CULTURE

The Boysenberry is an improved Loganberry and, like its parent, is a warm climate crop. It can be grown in the colder regions of Ontario, such as the Ottawa district, but enough fruit is not produced to make it commercially worth while. The Boysenberry is usually grown for canning. It does not make a satisfactory product for the fresh fruit trade.

The plants are set in rows about seven or eight feet apart, with the plants about two feet apart in the rows. They are grown on the hedge-row system, using a two-wire trellis. The fruiting vines are tied to the trellis, and, when harvesting has been completed, they are removed by cutting them back close to the ground. In most parts of eastern Ontario and Quebec, the new shoots which have been allowed to grow along the ground are protected during the winter months by covering them with soil just before the ground freezes. In the early spring when the buds commence to swell the soil is removed and the vines are put up on the wires.

The best fertilizer is well rotted barnyard manure applied at the rate of about 10 pounds per plant. If this is not available, a 9-5-7 commercial fertilizer may be used at the rate of three or four pounds per plant.

